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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,825	12/04/2003	Young Tack Song	29936/39860	7478
4743	7590	12/21/2004	EXAMINER	
MARSHALL, GERSTEIN & BORUN LLP 6300 SEARS TOWER 233 S. WACKER DRIVE CHICAGO, IL 60606			THAI, LUAN C	
			ART UNIT	PAPER NUMBER
			2829	

DATE MAILED: 12/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/727,825	Applicant(s) SONG, YOUNG TAEK	
	Examiner Luan Thai	Art Unit 2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 1 is rejected under 35 U.S.C. 102(b)/(e) as being anticipated by Cho et al (6,177,320) and Park et al. (6,723,655) separately.

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claim 1, Cho et al. (see specifically figures 4A-4G) disclose a method for manufacturing a semiconductor device comprising the steps of: preparing a semiconductor substrate (100) defined as an active region (101) and a field region (102), forming a number of word lines (104) in the active region and the field region of the semiconductor substrate (figures 4A-4B), depositing an insulator film (108) over the

upper part of a structure to insulate word lines (figure 4C), patterning the insulator film (108) to open word lines of the active region whereby forming a landing plug contact (111a) (figures 4D-4E); depositing a poly silicon film (112) to fill up the landing plug contact and performing a first polishing process using slurry including a first doping material and flattening the poly silicon film only, whereby exposing the insulator film (figure 4F); forming a landing plug by performing a second polishing process using slurry including a second doping material and by flattening all the upper part of the structure (figure 4G).

Regarding claim 1, Park et al. (see specifically figures 3-7) disclose a method for manufacturing a semiconductor device comprising the steps of: preparing a semiconductor substrate (11) defined as an active region and a field region (13), forming a number of word lines (15/17/19/21) in the active region and the field region of the semiconductor substrate (figures 3A-3B), depositing an insulator film (27) over the upper part of a structure to insulate word lines (figure 4), patterning the insulator film (27) to open word lines of the active region whereby forming a landing plug contact (29); depositing a poly silicon film (31) to fill up the landing plug contact (figure 5); performing a first polishing process using slurry including a first doping material and flattening the poly silicon film only, whereby exposing the insulator film (figure 6); forming a landing plug by performing a second polishing process using slurry including a second doping material and by flattening all the upper part of the structure (figure 7).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cho et al (6,177,320) and/or Park et al. (6,723,655) in view of Doan (6,284,660).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claim 2, Cho et al. and/or Park et al. disclose the claimed invention as detailed above except for specifying the first doping material being *boron*.

Boron, however, is conventionally used in semiconductor art, as a doping material as taught by Doan (see Column 4, lines 10+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use *boron* as a doping material in the process of Cho et al. and/or Park et al., since *boron* is a known material in the art, as taught by Doan and it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claim 4, Cho et al. and/or Park et al. disclose the claimed invention as detailed above except for specifying the first doping material being *phosphorus*.

Phosphorus, however, is conventionally used in semiconductor art, as a doping material as taught by Doan (see Column 4, lines 10+). It would have been obvious to one

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of ordinary skill in the art at the time the invention was made to use *phosphorus* as a doping material in the process of Cho et al. and/or Park et al., since *phosphorus* is a known material in the art, as taught by Doan and it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claims 3 and 5, the proposed process of Cho et al. and/or Park et al. and Doan discloses the claimed invention as detailed above except for specifying the concentration of boron and/or phosphorus to be in the *range 2wt% to 5wt%*, as claimed in claim 3 and claim 5 respectively. Although the proposed process of Cho et al. and/or Park et al. and Doan does not specify the range of the concentration of boron and/or phosphorus as claimed, such concentration range could be optimized by the practitioner. Noted that "*Normally, it is to be expected that a change in concentration range would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art . . . such ranges are termed 'critical ranges' and the applicant has the burden of proving such criticality . . . More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.*"

In re Aller 105 USPQ 233, 255 (CCPA 1955). See also In re Waite 77 USPQ 586 (CCPA 1948); In re Scherl 70 USPQ 204 (CCPA 1946); In re Irmischer 66 USPQ314 (CCPA

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1945); In re Norman 66 USPQ 308 (CCPA 1945); In re Swenson 56 USPQ 372 (CCPA 1942); In re Sola 25 USPQ 433 (CCPA 1935); In re Drevfus 24 USPQ 52 (CCPA 1934).

Note that the specification contains no disclosure of either the critical nature of the claimed concentration range of any unexpected results arising there from. Where patentability is aid to be based upon particular chosen concentration range or upon another variable recited in a claim, the Applicant must show that the chosen concentration range are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQZd 1934, 1936 (Fed. Cir. 1990).

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is 571-272-1935. The examiner can normally be reached on 6:45 AM - 4:15 PM, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Tokar can be reached on 571-272-1812. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Luan Thai', with a long horizontal flourish extending to the right.

Luan Thai

Primary Examiner

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December 14, 2004